

**AMENDMENTS TO THE CLAIMS:**

**Please amend the claims as follows:**

1. (Currently Amended) A method of reducing warranty costs, comprising:  
monitoring indicators in a computer system; and  
discriminating between a hardware-induced problem or outage and a software-induced problem or outage is a in the computer system based on said indicators.
2. (Currently Amended) The method according to claim 1, wherein said indicators comprise indicators of system software and hardware health, said method further comprising:  
periodically storing said indicators ~~of system software and hardware health~~ prior to the problem or outage.
3. (Currently Amended) The method of claim 2, further comprising:  
~~after the problem or outage,~~ analyzing ~~those~~ said indicators to determine whether the problem or outage was due to hardware or software, after the problem or outage occurs.
4. (Original) The method of claim 3, further comprising:  
presenting information regarding a cause of the problem or outage to a user of the computer system to prevent an unnecessary service call and hardware replacement.
5. (Original) The method of claim 1, further comprising:

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depending upon said determining of said hardware-induced problem or outage or said software-induced problem or outage, determining a manufacturer of said hardware or said software having undergone said problem or said outage.

6. (Currently Amended) The method of claim 1, wherein, in event of ~~an outage~~ of one of said a hardware-induced problem or outage and a software-induced problem or outage, pre-outage data is stored in a log file across the outage.

7. (Currently Amended) A method of reducing warranty costs associated with a computer system, comprising:

monitoring indicators in a computer system;

detecting a lack of performance of said computer system; and

discriminating whether said lack of performance was caused by a hardware-induced problem or outage or a software-induced problem or outage based on said indicators.

8. (Original) The method of claim 7, further comprising:

gathering pre-lack of performance data, said discriminating being performed based on said pre-lack of performance data.

9. (Original) The method of claim 7, further comprising:

recovering from said lack of performance.

10. (Currently Amended) The method of claim 8, wherein said lack of performance comprises an outage, and in event of ~~an outage of one of said hardware-induced problem~~ or outage and said software-induced problem or outage, said pre-outage data is stored across the outage.

11. (Currently Amended) A method of reducing warranty costs, comprising:

monitoring indicators in a computer system;

discriminating between a hardware-induced problem or outage and a software-induced problem or outage in a said computer system based on said indicators; and

based on said discriminating, reducing a duration of a service call and ensuring that a service technician has a correct part on hand at a time of repair.

12. (Currently Amended) The method according to claim 11, wherein said indicators comprise indicators of system software and hardware health, said method further comprising:

periodically storing said indicators ~~of system software and hardware health~~ prior to the problem or outage.

13. (Currently Amended) The method of claim 12, further comprising:

after the problem or outage, analyzing the indicators to determine whether the problem or outage was due to said hardware-induced problem or outage or said software-induced problem or outage and which hardware or software subsystem was most likely a cause of the outage, and to produce information.

14. (Original)The method of claim 13, further comprising:

presenting the information to a service technician of a computer system to replace or repair a faulty subsystem.

15. (Currently Amended)A method of reducing a trouble-shooting cost in a computer system, comprising:

sampling system health data from a plurality of sources, and storing said data in a log;

determining whether ~~an~~ said outage event has occurred; and

based on whether ~~an~~ said outage event occurs, analyzing logged and other data to judge a likely cause of the event.

16. (Currently Amended)The method of claim 15, ~~wherein~~ further comprising:

if the outage event is judged to be due to comprises a software outage or problem, determining whether automatic recovery is possible, and if so, invoking an automatic recovery mechanism and notifying a customer or field support personnel that a said software outage or problem is the cause of the event, and identifying a faulty subsystem for subsequent troubleshooting.

17. (Currently Amended)The method of claim 15, ~~wherein~~ further comprising:

if the event the outage event is judged to be due to comprises a software outage or problem, determining whether automatic recovery is possible, and if not, ~~then~~ indicating

that the event is due to said software outage or problem, and is not automatically recoverable, and notifying a customer or service technician to manually recover the fault.

18. (Currently Amended) The method of claim 15, further comprising:

determining whether the event is comprises a software fault outage or problem and if not, ~~then~~ determining whether a diagnosable hardware fault outage or problem exists.

19. (Currently Amended) The method of claim 18, further comprising:

if the event is judged to be caused by hardware, ~~then~~ examining at least one of a hardware error log, an error register, and a hardware diagnostic, and attempting to localize a replaceable component that caused the event;

informing a customer or a service technician that the outage was due to hardware; and manually recovering the hardware by replacing only defective hardware.

20. (Original) A computer node associated with a computer system, comprising:

hardware for executing an operating system, at least one application program, and a system health monitoring program,

wherein said system health monitoring program gathers system software and hardware health data from an application program, an operating system, and the hardware, and discriminates a cause of an event comprising at least one of a problem or outage of said computer node.

21. (Currently Amended)The computer node of claim 20, wherein said computer node ~~includes~~ comprises sources of information for assessing software and hardware health.

22. (Currently Amended)The computer node of claim 21, wherein said information is measured and logged prior to a failure event, and

wherein said system health monitoring program monitors at least one of resource consumption data, system and application software error logs, system utilization and performance data, and software error counts.

23. (Original)The computer node of claim 20, wherein said system health monitoring program monitors at least one of concurrent diagnostics, hardware error logs, and hardware error counts, and

wherein said system health monitoring program gathers information after the event, including at least one of error logs, crash dumps of memory, error codes, offline or power-on hardware diagnostics, and hardware error registers.

24. (Original)The computer node of claim 20, wherein said system health monitoring program includes a log device for permanently storing a time history of system software and hardware health data, said log device being readable after an event to determine a likely cause of the event.

25. (Original)The computer node of claim 20, wherein said system health monitoring program includes an analyzer for analyzing the software and hardware health data.

26. (Original)The computer node of claim 25, wherein said analyzer is run on one of the computer system that has experienced a problem, ~~or on~~ and another execution environment.

27. (Currently Amended)The computer node of claim 20, wherein said system health monitoring program ~~includes~~ comprises a notifier for notifying a customer or field service support personnel regarding a cause of the outage or problem, whether a service call is necessary, and where the likely cause of the outage or problem resides.

28. (Original)The computer node of claim 20, wherein said system health monitoring program samples a plurality of parameters, said plurality of parameters including at least one of:

a parameter indicating a number of bytes that must be kept in physical memory and cannot be paged out to disk;

a parameter indicating a number of bytes that reside in said physical memory plus the paging files;

a parameter indicating a number of errors that have been reported by transmission control protocol (TCP)/Internet Protocol (IP) software; and

a parameter indicating whether said TCP errors are accompanied by Network Adapter Errors.

29. (Currently Amended) A system for use with a computer system, comprising:

a software program for monitoring indicators in a computer ;

an outage detector for detecting ~~and~~ a problem or outage;

a memory for storing pre-outage data of the system; and

a discriminator for discriminating whether said outage was caused by a hardware component or a software component of said system.

30. (Original)The system according to claim 29, wherein, in event of an outage of one of said hardware and software, said pre-outage data is stored across the outage.

31. (Currently Amended)A signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method for reducing warranty costs, said method comprising:

monitoring indicators in a computer system; and

discriminating between a hardware-induced problem or outage and a software-induced problem or outage in a computer system based on said indicators.

32. (New) The method according to claim 1, wherein said indicators comprise indicators of said software health comprising at least one of resource consumption data, system and application error logs, system utilization and preference data, and software error accounts.



33. (New) The method according to claim 1, wherein said indicators comprise indicators of said hardware health comprising at least one of concurrent diagnostics, hardware error logs, and hardware error counts.

34. (New) The method according to claim 1, further comprising:

continuously monitoring and storing indicators of system software health and hardware health after said problem or outage.

35. (New) The method according to claim 34, wherein said indicators monitored after said problem or outage comprise at least one of error logs, crash dumps or memory, error codes, offline or power-on hardware diagnostics and hardware error registers.

36. (New) The method according to claim 1, wherein said monitoring comprises:

sampling a plurality of parameters comprising at least one of a parameter indicating a number of bytes that must be kept in physical memory and cannot be paged out to disk, a parameter indicating a number of bytes that reside in said physical memory plus the paging files, a parameter indicating a number of errors that have been reported by transmission control protocol (TCP)/Internet Protocol (IP) software; and a parameter indicating whether said TCP errors are accompanied by Network Adapter Errors.

37. (New) The method according to claim 1, wherein another execution environment is used to perform said monitoring.

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38. (New) The method according to claim 1, wherein said monitoring indicators in a computer system comprises monitoring said indicators prior to a problem or outage.